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Investigation of interaction features of oil emulsions and sorption material based on beet processing waste

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Abstract

© 2016 Authors. Research results of interaction features of model water emulsions of edible oils with the sorption material received on the basis of carbonate containing withdrawal of processing of sugar beet are given in work. The Carbonation sludge which is formed in the course of beet sugar production was exposed to heat treatment at a temperature of 600 °C for carbonization of the organic substances which are available in its structure for the purpose of material sorption characteristics improvement. It is established that interaction of sorption material with model emulsions of edible oils is carried out at the expense of adsorption forces, the lack of influence of structural features, such as presence of functional groups (-IT, as in case of ricinoleic acid) and lengths of a carbon chain of molecules of fatty acids on intensity of sorption interaction with sorption material is proved. The isotherms constructed on the basis of experimental data demonstrate monomolecular adsorption of oils on a surface of the modified carbonation sludge. Values of sorption capacity for the studied material are: 182 mg/g for sunflower oil; 184 mg/g for soy oil and 189 mg/g for olive. It is defined that adsorption of oils happens within the first 10-20 minutes then the active centers of the thermally modified carbonation sludge are sated.

Keywords

Adsorption isotherm, Carbonation sludge, Cleaning, Edible oils, Model water oil emulsions, Sorption material

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